BQDM QUARTERLY EXPENDITURES & PROGRAM REPORT

Q2 - 2018

Contents

1.0 Background

On December 12, 2014, the New York Public Service Commission ("Commission") issued its *Order Establishing Brooklyn/Queens Demand Management Program* ("Order").[1] The Order requires Consolidated Edison Company of New York, Inc. ("Con Edison" or the "Company") to submit quarterly reports to the Commission on its "expenditures and program activity" that include project costs, project in-service dates, Monthly Adjustment Clause ("MAC") recoveries, incremental costs incurred, operational savings, and other benefits. This is the fourteenth Brooklyn Queens Demand Management ("BQDM") quarterly report ("Report") and primarily covers expenditures and program activity for the second quarter of 2018.

2.0 Executive Summary

2.1 Costs and Recovery

The Company spent $3.96 million on the BQDM Program during the second quarter 2018, and has spent $74.84 million to date (see Figure 1).

[1] Case 14-E-0302, *Petition of Consolidated Edison Company of New York, Inc. for Approval of Brooklyn Queens Demand Management Program,* Order Establishing Brooklyn/Queens Demand Management Program (issued December 12, 2014).

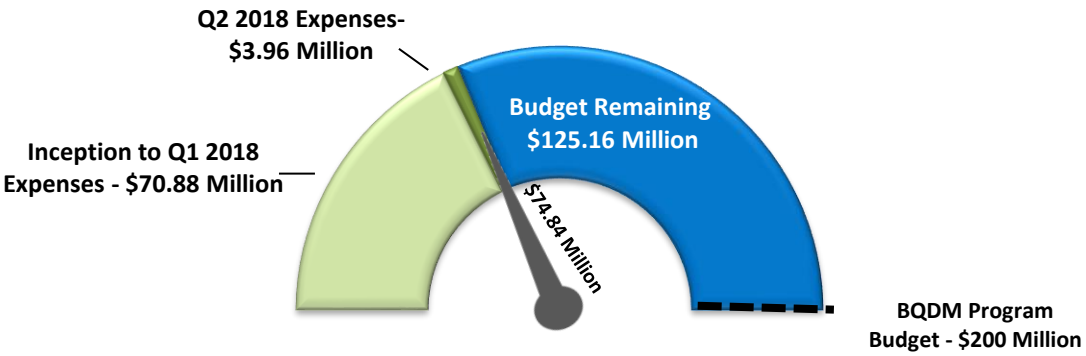

Figure 1: BQDM Program Budget and Expenditures[2]

Prior to January 1, 2017, costs incurred were recovered through the MAC in accordance with the Order. With the Commission's approval on January 25, 2017 of the Con Edison electric rate plan in Case 16-E-0060, beginning January 2017 BQDM expenditures are being recovered through base rates.[3] The Company incurred expenses related to efforts undertaken to address reliability needs in the BQDM target area ("BQDM Area" or "BQDM Target Area" or "Target Area")[4] prior to the issuance of the Order. Those efforts were pursued through the then

[2] Note that the costs incurred during the quarter may include expenses related to services rendered prior to the quarter if the invoices were processed during the quarter. Similarly, the costs incurred during the quarter may not include all expenses related to services rendered during the quarter, if the invoices related to such services were not processed during the quarter. Total expenses from the previous quarter have been updated to account for $100,000 that was previously not captured during utility-side and customer-side solutions reconciliation.

[3] Case-16-E-0060, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service*, Order Approving Electric and Gas Rate Plans (issued January 25, 2017), p. 38.

[4] References to Brooklyn-Queens Area in this filing refer to north central and eastern Brooklyn neighborhoods, including parts of Greenpoint, East Williamsburg, Bushwick, Bedford-Stuyvesant, Crown Heights, East Flatbush, Brownsville, and East New York,

existing Targeted Demand Side Management ("TDSM") program.[5] In order to accurately reflect all costs incurred to address the projected overload in the BQDM target area and to maintain a single set of accounting rules on all expenses related to the BQDM Program, charges incurred under the TDSM program that are related to the BQDM target area have been reclassified to the BQDM Program, so that the Company can collect all BQDM Program related charges incurred before or after the issuance of the Order as BQDM Program costs.

Table 1: BQDM Program Second Quarter 2018 Expenditures

Program/Projects	Apr-18	May-18	Jun-18	Q2 2018 Total	2018 BQDM	BQDM Total
Customer-Side Solutions						
Incentives	$ 0.40	$ 0.30	$ 1.27	$ 1.97	$ 2.43	$ 44.14
Program Implementation & Administration	$ 0.13	$ 0.15	$ 0.03	$ 0.32	$ 0.49	$ 3.98
Sales, Marketing, & Training	$ 0.02	$ 0.02	$ 0.02	$ 0.07	$ 0.12	$ 1.16
Technology, Measurement and Verification (M&V), and Evaluation	$ 0.13	$ 0.09	$ 0.07	$ 0.29	$ 0.25	$ 8.03
Third-Party Oversight	$ -	$ -	$ -	$ -	$ -	$ -
Market Research & Analytics	$ -	$ -	$ -	$ -	$ 0.01	$ 0.03
Total Customer-Side Solutions	$ 0.69	$ 0.56	$ 1.40	$ 2.65	$ 3.31	$ 57.33
Utility-Side Solutions						
Program Implementation & Administration	$ 0.05	$ 1.20	$ 0.06	$ 1.32	$ 1.68	$ 17.37
Technology, Measurement and Verification (M&V), and Evaluation	$ -	$ -	$ -	$ -	$ -	$ 0.13
Total Utility-Side Solutions	$ 0.05	$ 1.20	$ 0.06	$ 1.32	$ 1.68	$ 17.51
Total Customer-Side Solutions and Utility-Side Solutions	$ 0.74	$ 1.76	$ 1.46	$ 3.96	$ 4.98	**$ 74.84**

The work to implement the load relief programs (described in more detail in Section 3 of this Report), research new technologies, manage request for information ("RFI"), request for proposals ("RFP") and other acquisition activities, and develop foundational elements of the BQDM Program (*i.e.*, accounting protocols, regulatory reporting, marketing approaches and

and southwestern Queens neighborhoods, including parts of Richmond Hill, Howard Beach, Broad Channel, Ozone Park, South Ozone Park, Woodhaven and Kew Gardens.

[5] Case 09-E-0115, *Proceeding on Motion of the Commission to Consider Demand Response Initiatives*, Order Adopting with Modifications a New Targeted Demand Side Management Program for Consolidated Edison Company of New York, Inc. (issued June 1, 2011).

outreach) was primarily conducted by Con Edison employees. The Company developed a General Accounting Procedure ("GAP")[6] for treatment of costs and collections associated with the BQDM Program and established internal billing accounts to properly manage program expenses. The Company recovered $4,501,500 through base rates for the second quarter 2018, resulting in a total of $28,154,864 from program inception to date, including recovery through the MAC and NYPA surcharges prior to 2017.

2.2 Projects Summary

The Company has achieved approximately 40.8 MW of peak hour non-traditional utility side and customer-side solutions installed by the end of second quarter of 2018.

The Company continued to make progress in contracting and installing energy efficiency measures through incentive adders to two existing Energy Efficiency Transition Implementation Plan ("ETIP") programs - the Commercial Direct Install ("CDI") and Multi-Family Energy Efficiency ("MFEE") programs. In addition to the success of these programs, the Company made significant headway in implementing various energy efficiency upgrades in the residential, commercial, and public building sectors, as well as implementing various solutions such as fuel cells, CHP, and demand response. By the end of the second quarter of 2018, customer side load relief commitments reached over 33.6 MW, of which over 24.8 MW of load relief measures were operational at the 9-10 PM hour (Section 3.1 presents a detailed account of activities on various customer-side solutions). The Company expects to achieve this load

[6] The Company filed the GAP with the Commission on February 10, 2015. *See* http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={59F25E6A-7ABA-4D95-BBD2-F6142F90C798}.

relief through installation of efficiency and demand management measures at over 6,700 small businesses, 1,660 multi-family buildings, 21,499 1-4 family residences, and various commercial properties in the community.

The Company continues to meet the reliability needs for 2018 using a combination of customer-side solutions and non-traditional utility-side solutions.

The charts in the quarterly reports provide a useful illustration of the diverse nature of non-traditional solutions that are not all available during the entire forecasted overload period and that are thus insufficiently defined by use of either a singular peak demand MW metric or the maximum load relief provided by each of the solutions during the overload period. Figure 2 below illustrates the anticipated hourly load relief provided by solutions that have already been implemented and are operational by the end of the second quarter 2018.

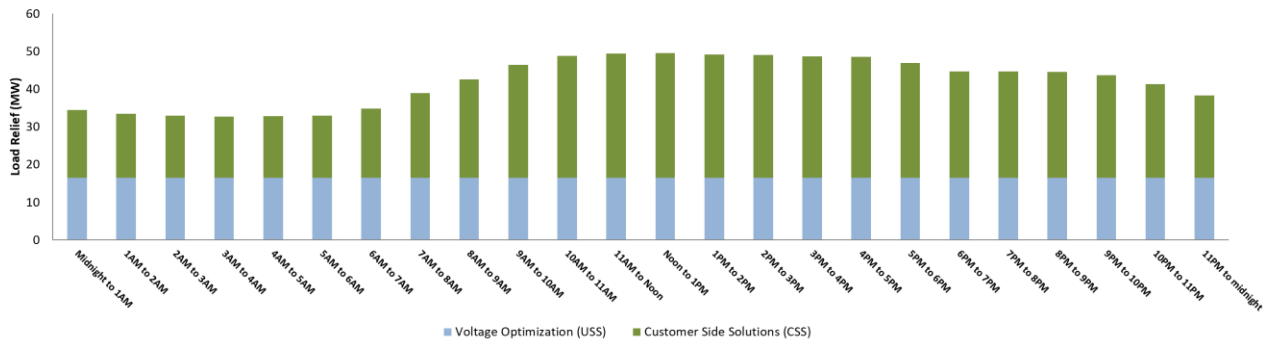

Figure 2: BQDM Load Relief Progress

Table 2 below provides a summary of the opportunities the Company has pursued. The Company efforts during the quarter are described in greater detail in Section 3 of this Report.

Table 2: BQDM Program Activity

	Design Stage*	Deployment Stage*
Customer-side Solutions		
Commercial Direct Install		√
Multi-family Energy Efficiency		√
Residential Energy Efficiency Program(s)		√
Bring Your Own Thermostat Adder ("BYOT")		√
Virtual Building Audits		√
New York City Housing Authority		√
Direct Customer Activity		√
Dynamic Resource Auction**		√
Fuel Cells		√
Queens Resiliency Microgrid	NP	NP
City Agency Solutions		√
Commercial Refrigeration		√
Combined Heat and Power ("CHP")		√
Battery Storage		√
BQDM Extension Auction ("XA")		√
Utility-side Solutions		
Distributed Energy Storage System		√
Distributed Generation (DC-Link)	NP	NP
Voltage Optimization		√
Solar Photovoltaic (PV) Pilot	NP	NP
Fuel Cell	NP	NP
Foundational Elements		
Distributed Energy Resource Evaluation Tool		√
Solutions Technology Validation		√
Community Engagement and Outreach		√
Measurement & Verification Activities		√
Demand Management Tracking System		√

*- "Design Stage" refers to early efforts initiated by the Company to determine whether, and if yes, how to proceed to implementation in a manner consistent with the objectives of the BQDM Program. "Deployment Stage" refers to implementation efforts either substantially complete or well underway to meet the objectives of the BQDM Program. "NP" refers to efforts the Company is no longer pursuing and does not expect to be a part of the BQDM Program portfolio of solutions.

** - "Dynamic Resource Auction" refers to market-driven approaches to procure demand response type resources with specific performance attributes.

2.3 Operational Savings and Other Benefits

The Company defines "operational savings" as reductions in costs incurred or expected to be incurred by the Company for the operation of the electric sub-transmission and distribution system supporting the BQDM target area as a result of BQDM solutions. No quantifiable operational savings in electric sub-transmission and distribution operations have yet been identified as a direct result of activities of the BQDM Program conducted in the second quarter of 2018 or earlier.

3.0 Program Activity

3.1 Customer-Side Solutions

In the second quarter of 2018, the programs continued to enable the Company to positively engage members of the targeted community as the Company continues to develop additional resources that can provide critical load relief in the BQDM Target Area. Second quarter 2018 program activities are detailed in the following sections.

Commercial Direct Install Program

The CDI Adder initiative, which was initiated on August 1, 2014, is open to commercial customers with a peak demand of 300 kW or less.[7] Participating customers receive a walk-through survey identifying cost-effective electric efficiency measures. Customers may elect to

[7] Beginning with the first quarter of 2016, the Company has offered the CDI adder program to all commercial customers in the BQDM Target Area that have a peak demand of less than 300 kW, an increase from the 110 kW threshold that was used through the end of 2015.

have all or any of the recommended measures installed. The ETIP CDI Program provides a payment of up to 70 percent of costs for the selected measures and the customer is typically responsible for the remaining amount. Under the CDI Adder initiative, customers in the BQDM Area receive an additional incentive, effectively receiving installation of eligible measures at no cost. The Company delivers this program through an implementation contractor responsible for the sales and installation of measures.

Under the CDI adder initiative, more than 6,700 small businesses in the BQDM Area have installed or agreed to install efficiency measures. These efficiency measures have resulted in over 128 GWh of annual energy reduction per ETIP guidelines[8] since the inception of the adder initiative. The outreach to these small businesses, in an area that continues to undergo considerable change, continues to be a positive development for the BQDM Program. Participation by these businesses is delivering direct benefits to an important segment of the community, and contributing towards establishing a positive experience in the wider community as the CDI Adder initiative progresses

The geographical distribution of the participants in the CDI Adder initiative as of June 30, 2018 is graphically portrayed in Figure 3.[9]

[8] ETIP (the successor program to the Energy Efficiency Portfolio Standard or EEPS program referred to in BQDM quarterly reports prior to second quarter 2016) guidelines are based on the New York State Technical Reference Manual ("TRM"), which has a standard set of deemed hours of operation for various businesses in order to estimate annual energy savings.

[9] The graphical representation of the network boundaries reflects approximate geographical boundaries. Some customers that seem to be outside of the boundaries are within the electrical circuits of the BQDM networks.

BQDM - SBDI

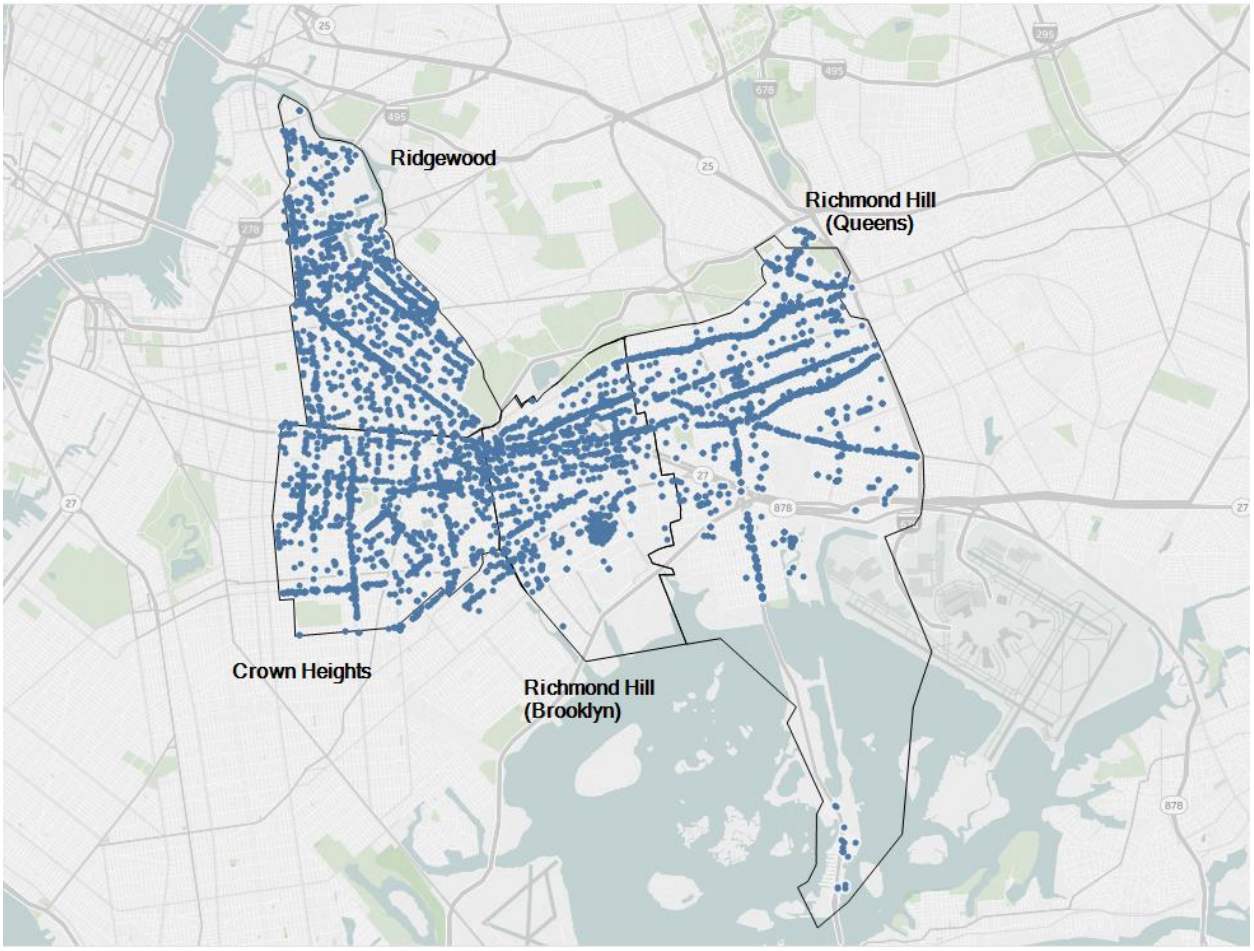

Figure 3: BQDM Commercial Direct Install Project Locations

Customer response continues to be strongly driven by a focused outreach to small businesses in the community. As of June 30, 2018, approximately 11.4 MW of peak hour load reduction projects, which are equivalent to approximately 36.1 MW as measured under the ETIP

guidelines,[10] involving approximately 6,700 small businesses, have been contracted[11].

Estimated hourly load relief from CDI program activities is presented in Figure 4.

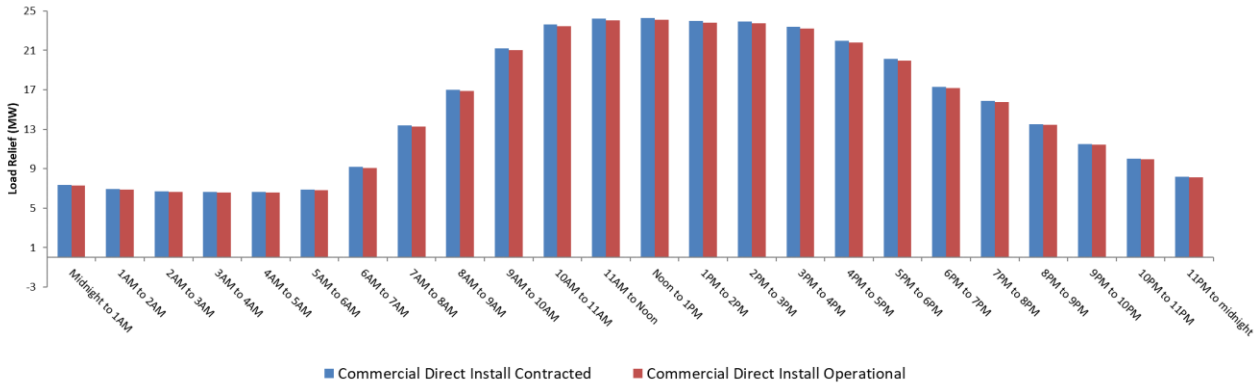

Figure 4: Commercial Direct Install Contracted vs. Operational Hourly Load Relief

Multi-Family Energy Efficiency Program

The Company developed an adder initiative for the existing ETIP MFEE Program on December 10, 2014, which offers multi-family dwellings of five units or higher a free survey identifying potential load-reduction measures.[12] The MFEE Program includes both measures installed within the dwelling units and measures installed within the indoor and outdoor common areas. Under the ETIP program, 100 percent of the cost of measures installed within the dwelling units

[10]The Company is reporting expected load relief provided by energy efficiency resource during the peak hour of the BQDM sub-transmission constraint. For the purposes of reporting on ETIP programs the Company only reports load relief quantities for CDI and MFEE on the basis of a system (or New York Control Area ("NYCA")) coincidence measurement as calculated using the TRM. Because the TRM assumes that external lighting would be off during afternoon peak hours, ETIP programs cannot claim any demand reduction benefits from external lighting upgrades. In contrast, the BQDM Program benefits greatly from external lighting upgrades, which provide load relief coincident with the BQDM needs in the evening hours. For external lighting upgrades, the Company has, since the first BQDM quarterly report, included their contribution on a delta-Watt basis in the gross demand reduction value when reporting figures attributed to the ETIP methodology.

[11] Program savings and number of small businesses have been updated to reflect a value that provides installations to date, with inclusion of projects that have been contracted and are expected to be installed at a future date. These updates are made due to factors such as delay in projects or a customer who may have changed their minds on pursuing a project As a result of this change, the contracted values have decreased from what was reported in previous quarterly reports.

[12] Beginning with the first quarter of 2016, the Company has offered the MFEE adder program to all multi-family buildings in the BQDM Target Area that have five units or higher, without the restriction that the building must have less than or equal to 75 units; a 75-unit restriction was in effect through the end of 2015.

is covered, but the program requires a property owner or building manager contribution for a percentage of the cost of measures installed in the common areas. Under the BQDM MFEE Adder initiative, eligible buildings within the BQDM networks will continue to have no out-of-pocket costs for measures installed in dwelling units, and will receive the measures in common areas at no cost to the property owner or the building manager. The MFEE Adder initiative is delivered through a central implementation contractor that in turn is utilizing multiple independent subcontractors within the BQDM Area.

As of June 30, 2018, the Company has contracted load reduction for in-dwelling and common area measures in over 1,660 buildings, with more than 8,500 individual apartments and representing over 4.7 MW of peak hour load relief, which is equivalent to over approximately 7.7 MW as measured under the ETIP guidelines.[13]

Collectively, the measures installed at the participants' premises are expected to result in more than 31.4 GWh of reduction in annual energy consumption per ETIP guidelines for the adder initiative since the inception of the adder initiative. The MFEE Adder initiative delivers approximately 80 percent of its load reduction contribution through the common area measures. Given that multi-family buildings vary in size from five units and above per building and the MFEE program includes a mix of common area and in-unit measures, the annual

[13] Program savings and number of buildings and apartments have been updated to reflect a value the provides installations to date, with inclusion of projects that have been contracted and are expected to be installed at a future date. These updates are made due to factors such as delay in projects or a customer who may have changed their minds on pursuing a project. As a result of this change, the contracted values have decreased from what was reported in previous quarterly reports.

savings per building varies widely. The MFEE Adder initiative provides valuable load relief that typically extends into late evenings, and is thus coincident with the extended peak of the networks targeted by the BQDM Program. Estimated hourly load relief from MFEE activities is presented in Figure 5.

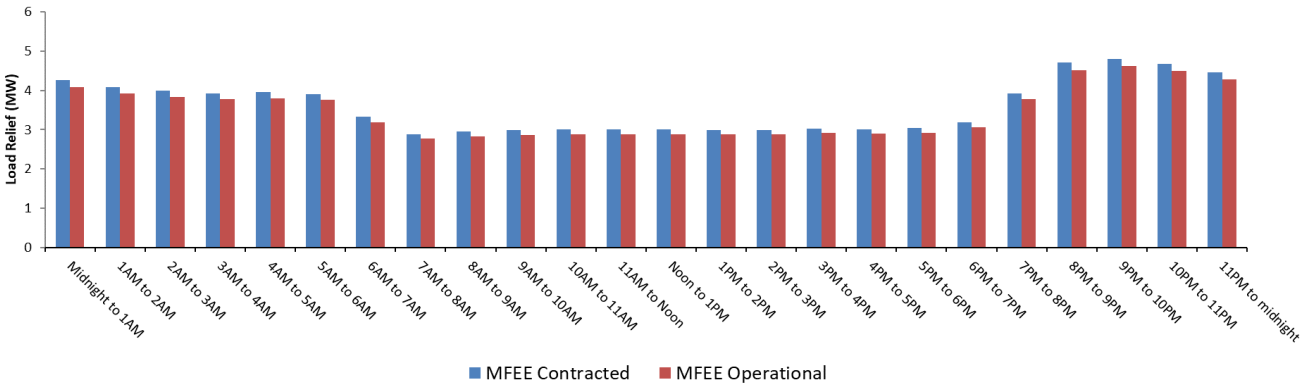

Figure 5: Multifamily Energy Efficiency Program Contracted vs. Operational Hourly Load Relief

The geographical distribution of the participants in the MFEE Adder initiative as of June 30, 2018 is graphically portrayed in Figure 6.[14]

[14] The graphical representation of the network boundaries reflects approximate geographical boundaries. Some customers that seem to be outside of the boundaries are within the electrical circuits of the BQDM networks.

BQDM - Multifamily

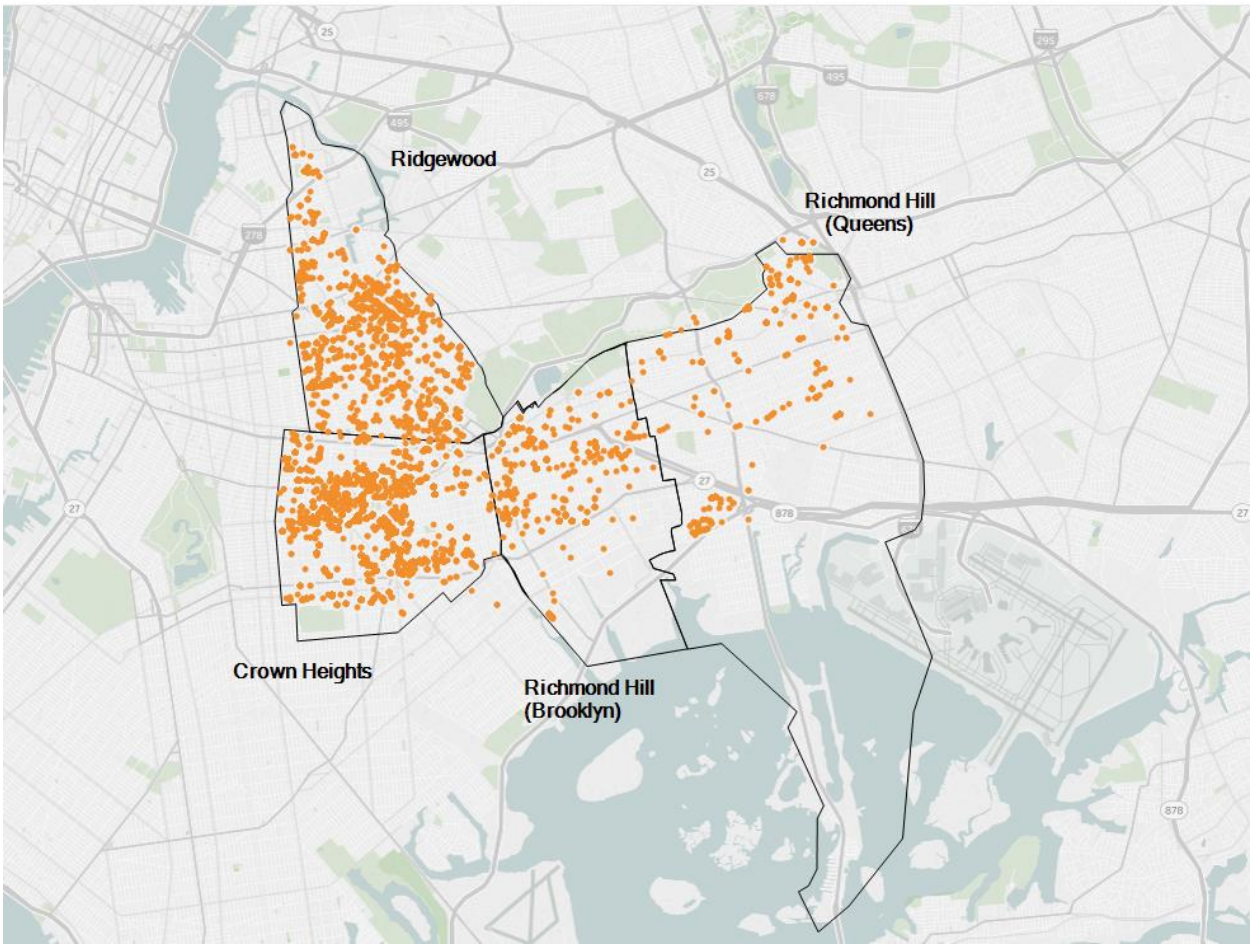

Figure 6: BQDM MFEE Project Locations

Residential Energy Efficiency Programs

Residential (1-4 family buildings) properties make up roughly 60 percent of all customer accounts, which represent approximately 30 percent of total peak demand in the BQDM Area. Given the significant portion of electric demand that residential properties cumulatively represent, the Company is targeting this customer segment to achieve load relief. Because practical solutions at a single residential customer location only provide a small amount of load relief, a large number of customers need to be engaged to obtain meaningful load relief. The Company's efforts to reach this population, in addition to providing critical load relief to the

Company, is positively impacting customer satisfaction for a significant customer segment in the BQDM Target Area.

The Company has extended the contract end date with its implementation contractor to acquire an additional 2 MW by December 2018, totaling a 4 MW peak load reduction from August 2016 to December 2018. The program is supported by marketing efforts including direct mail, email, call center outreach, social, and digital advertising. Through the end of the second quarter of 2018, over 21,499 units were completed, resulting in approximately 3.1 MW of peak load relief based on the Company's current best estimates for the 9 to 10 pm peak hour.

The geographical distribution of the participants in the Residential Direct Install initiative as of June 30, 2018 is graphically portrayed in Figure 7.

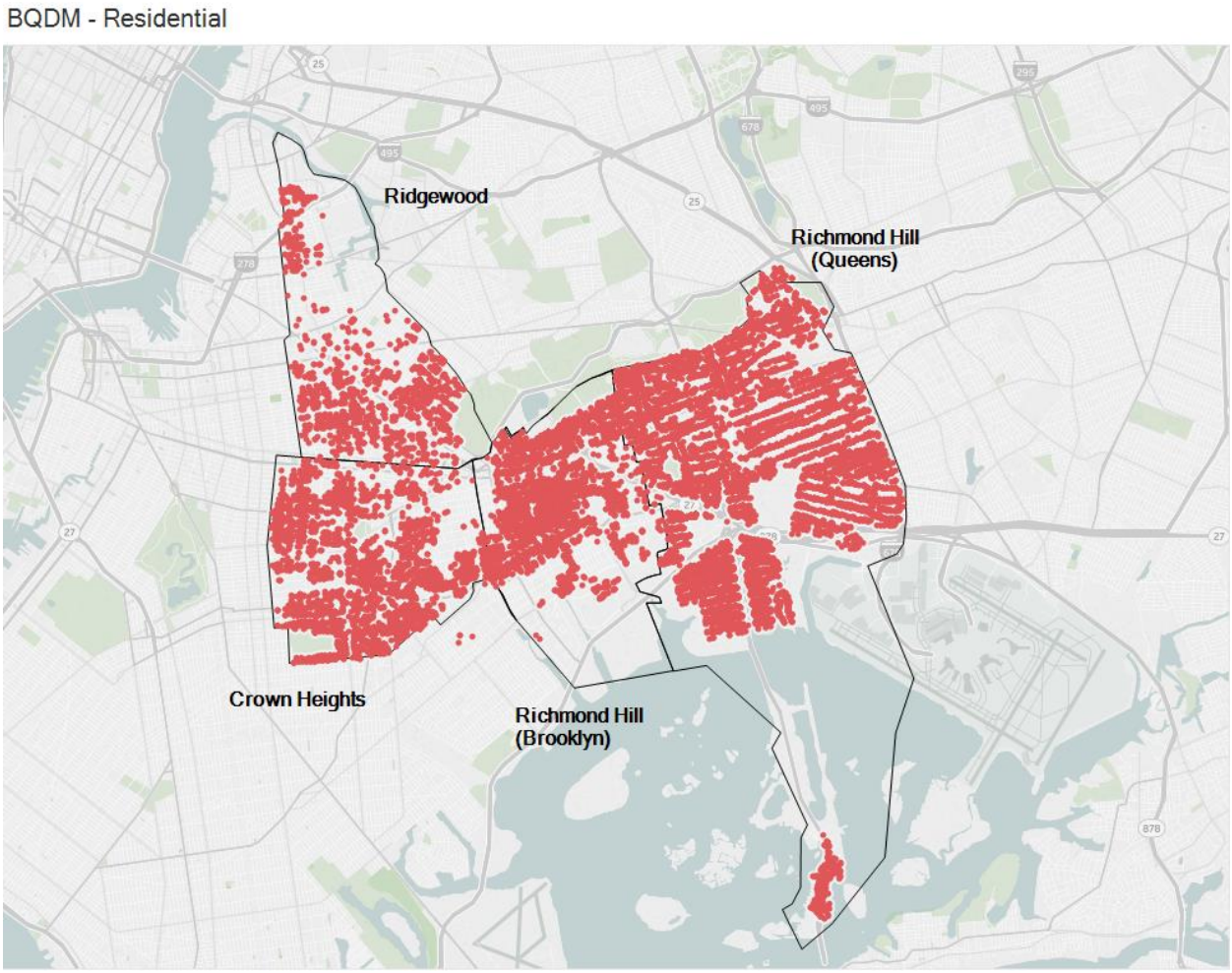

Figure 7: Residential Direct Install Project Locations

As a separate initiative, the BQDM Program continues with the Company's Bring Your Own Thermostat ("BYOT") program, part of the ETIP residential program, to develop an additional incentive mechanism to spur participation within the BQDM networks. The BQDM Program provides an adder to the BYOT Program for customers who have the ability to control central air conditioning in their homes using smart thermostats. By the end of the second quarter of 2018, approximately 262 units were procured through the adder programs based on the Company's current best estimates, which represent about 118 kW of peak load reduction for

the 9 to 10 pm period. To increase customer participation in the BYOT program, the Company is increasing its marketing efforts and promotional offers in the marketplace platform.

Direct Customer Activity

In addition to the programs described above, the Company has engaged in discussions with customers in the BQDM Target Area who have expressed interest in pursuing their own load relief solutions at their locations. The Company has been encouraged by the active engagement of such customers who have the ability and willingness to implement load relief projects that would both benefit the customers as well as address BQDM Program goals.

The BQDM Program leverages existing ETIP funding channels when a customer's project is deemed beneficial for the BQDM Program. Several commercial customers, who have applied for the Company's ETIP Commercial and Industrial program for various energy efficiency projects, also applied for additional funding from the BQDM Program to increase the scope of their projects to deliver higher levels of load relief in the BQDM Target Area. As of Q2 2018, the Company has completed over 12 projects and delivered over 400 kW of verified load relief during the 9-10 PM period. An additional 50 kW of peak load reduction is anticipated through the end of 2018 from this effort.

In addition, the Company is evaluating a new "phase change material" technology that will provide peak load reduction. The technology actively absorbs and expends heat to help maintain comfortable temperatures while reducing peak demand by offsetting the use of air

conditioning. This measure was implemented at commercial locations within the BQDM program territory and is awaiting post-installation metering during the summer of 2018.

City Agencies Initiatives

New York City Housing Authority

The Company currently has a signed agreement with the New York City Housing Authority ("NYCHA") to pursue load relief measures focused on in-unit and common area lighting.

NYCHA completed phase one of the two-year effort, which resulted in energy-efficiency lighting upgrades across 18 public housing developments for a verified peak load reduction of 1.6 MW in Brooklyn ahead of the June 1, 2017 milestone. The Company is working with NYCHA to execute the second phase of the project, which will include 5 additional developments in Brooklyn for an expected peak load reduction of 1 MW in 2018.

As noted in previous BQDM Program quarterly reports, the Company engaged with NYCHA on a smaller initiative to provide an additional incentive for lighting upgrades through NYCHA's Weatherization Assistance Program ("WAP"), which is funded by the U.S. Department of Energy and Health and Human Services and enables low-income families in smaller buildings to reduce their energy bills by taking advantage of energy efficiency opportunities. NYCHA was able to complete energy upgrades through WAP in five low-rise buildings with a total of 150 apartments by June 1, 2017 and has achieved approximately 27.3 kW in peak load reduction.

An estimated 51 local hires resulted from a program that engages young adults from low income communities in national service related to the environment, supporting field operations for the NYCHA projects, such as performing apartment surveys and in-unit energy efficiency installations which support load reductions in the BQDM Area.

Other Opportunities with City Agencies

The Company is continuing to work with other City agencies to identify a range of viable demand reduction solutions. During the fourth quarter of 2015, the City agency submitted to the Company the projects it vetted through a project solicitation it previously conducted. These projects include interior and exterior lighting and HVAC measures at several City agency facilities.

Based upon the projects submitted, the Company has provided incentives to the City for energy efficiency upgrades that are expected to provide load relief during the 9-10 pm peak hour (primarily exterior lighting) and will engage customers who can also provide load relief during hours earlier in the day to help the forecasted overload period, *i.e.*, projects at facilities that close earlier in the day but can provide load relief during the afternoon.

These projects have been completed and verified for load reductions and the Company is increasing the scope of work for energy efficiency to achieve additional load relief. As of Q2, 2018, the result of the M&V analysis for the projects is an estimated 80 kW of load relief at 9-10 PM.

Dynamic Resource Auction

Descending Clock Auction

With the goal to meet the reliability need during the peak hours in the targeted area in 2017 and 2018, the Company developed and hosted a descending clock auction on July 27-28, 2016, to procure resources with specific performance attributes as described below.

In this auction, the Company sought resources that were dynamic, *i.e.*, callable or dispatchable, and expected to provide load relief for up to four hours at a time during the BQDM Target Area peak period. The Company obtained such dynamic resources through a competitive market acquisition process, a descending clock auction, which attracted demand response ("DR") type solutions to meet the Company's program objectives.

There were four DR products in the BQDM DR offering:

- 8 PM — 12 AM for the 2017 capability period;
- 4 PM — 8 PM for the 2017 capability period;
- 8 PM — 12 AM for the 2018 capability period; and
- 4 PM — 8 PM for the 2018 capability period.

The auction exceeded expectations on supplier diversity, new entrants, and technological diversity of solutions. Six of the ten awarded bidders had never before participated in a Con Edison DR program. More than half of the awardees proposed new technologies such as

battery energy storage as their primary means of providing DR, which in the Company's service territory has traditionally been provided through curtailment or onsite generation technologies. In the first quarter of 2018, awarded bidders were required to notify the Company of any deficiencies they were declaring from their pledged kW reduction for the 2018 capability period.

The BQDM DR Auction procured a total of 22.69 MW of load reduction for 2018 between the two products offered. Of that, 19.08 MW was declared deficient from six of the ten awarded bidders, with the majority for the 8PM – 12AM product. More than half of the awardees proposed technologies such as battery energy storage as their primary means of providing DR; however, with the lack of clarity in the battery permitting process and lengthy time involved, these awardees were not able to have their battery energy storage solution installed for the 2018 capability period. Others also declared partial deficiency due to difficulty with customer acquisition.

The reallocation of deficient MW was initially offered to non-deficient BQDM aggregators who received an award in the BQDM DR auction, on a first come, first-served basis. Five business days after the reallocation offering, the kW were offered to aggregators in good standing that participated in Con Edison's Reservation Option CSRP or Reservation Option DLRP in previous years.[15]

[15] Reallocations were made pursuant to the Company's BQDM Auction Program Rules.

For the 2018 BQDM DR capability period, 2.63 MW of load reductions were enrolled for the 4 PM to 8 PM call window and 2.52 MW were enrolled for the 8 PM to 12 AM window. The voluntary DR program for the BQDM territory also received 2.09 MW of pledged load reductions.

On June 18, 2018, a DR event was called due to a forecasted overload in the BQDM networks. Performance of load reductions relative to the enrolled kW will be reported following the summer capability period.

Distributed Generation

CHP Solutions

The Company has worked closely with the New York State Energy Research and Development Authority's ("NYSERDA") combined heat and power ("CHP") program administrators as well as the natural gas provider in the area, National Grid, and its CHP team, to investigate the potential for CHP development in the BQDM area. The Company, working in collaboration with NYSERDA, provides additional funds up to the base incentive level that NYSERDA offers under its CHP Acceleration Program, covered by Program Opportunity Notice ("PON") 2568,[16] for eligible installations in the BQDM Area.

To date, the Company has contracted over 2 MW of load relief capacity from CHP systems with 0.99 MW in service as of the end of 2017 and at least an additional 1.6 MW expected by the

[16] Information about NYSERDA's CHP Acceleration Program can be found at http://www.nyserda.ny.gov/PON2568; URL last accessed 10/28/2016

end of 2018. M&V concluded an analysis of each CHP unit's load reduction performance during the 2017 Summer Period. The M&V assessment quantified the average hourly load relief performance from CHP to be in excess of 800 kW during the 9 to 10 PM peak hour over summer 2017.

One new CHP project application was submitted and accepted into the 2018 CHP Program. The Company continues engagement with National Grid to explore deployment of micro-CHP systems (less than 10 kW units) for residential and multi-family customers in the BQDM Area. The geographical distribution of CHP projects installed as of June 30, 2018 is graphically portrayed in Figure 9 on page 25 below. The size of the dot relates to its capacity installed in kW.

Fuel Cells

The Company investigated innovative solutions that could provide reliable load relief during the forecasted period of more than 12 hours of potential overload. In particular, the Company studied the use of efficient fuel cells or other similar resources that generate electricity through non-combustion chemical mechanisms and determined that they are able to provide long periods of load relief efficiently and reliably, with minimal operational overhead. These resources can be built with somewhat minimal lead time, while using a relatively small footprint in the land-constrained targeted area. The Company investigated business arrangements that would incent adoption of such technologies such that third-party capital could be leveraged in a manner that is both beneficial to the customer and cost effective to the Company. The

Company identified and engaged customers who have the potential to realize savings and gain additional benefits by implementing these solutions.

By the end of Q2 2018, the Company has achieved 2.6 MW of fuel cells installed and operational, with more expected to be operational by the third quarter 2018. One project site includes a successful multi-technology installation at low-income facility, consisting of fuel cells, batteries, and solar.

Additional projects are scheduled to be operational by September 1, 2018, and are expected to provide approximately 3.5 MW of additional load relief for the BQDM networks.

Solar Photovoltaic

The BQDM Program helps customers with the interconnection process for various distributed energy resources ("DER") in the target area. In one instance, the BQDM Program agreed to cover the cost of the Supervisory Control Data Acquisition ("SCADA") system upgrade required to interconnect the applicant's solar photovoltaic project to the electric grid. The project has a rated nameplate capacity of approximately 750 kW and is fully operational. Actual hourly load relief will be monitored through the Company's M&V efforts. A second project that is benefiting from similar arrangement has a rated nameplate capacity of approximately 800 kW and is expected to be in operation by the summer of 2018.

The geographical distribution of the Innovative Distributed Generation projects installed as of June 30, 2018 are graphically portrayed in Figure 9. The size of the dot relates to its capacity installed in kW.

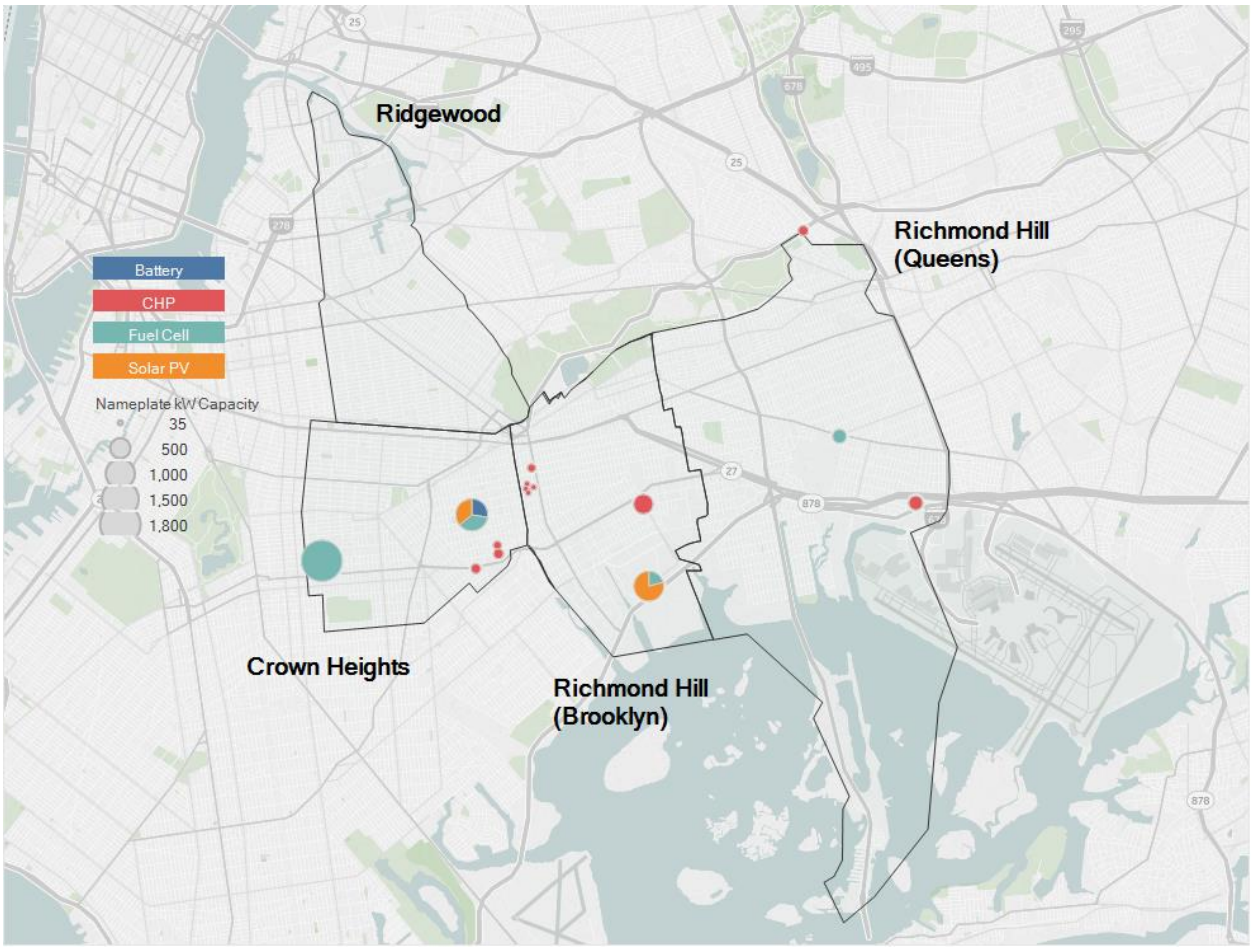

Figure 9: Distributed Generation Project Locations

Commercial Refrigeration

In the first quarter of 2016, the Company started to explore innovative refrigeration measures to provide demand reduction around the BQDM peak hour. As such, the Company entered into discussions with a respondent to the Company's Commercial Refrigeration RFP, which offered an innovative thermal storage solution. The thermal storage system is designed to offset

process cooling load for a predetermined period, callable upon Con Edison's request. A salt water solution is frozen during off-peak hours that can then be used to provide at least four hours of load relief during periods of reliability need by displacing refrigeration compressor load.

After working with Con Edison personnel and conducting thorough targeted research, the adoption of thermal storage technology has been unsuccessful. The Company is not pursuing load reduction opportunities with this technology at this time.

Customer-Side Solutions Program Management Activities

Market Solicitations

On July 15, 2014, the Company issued a broad RFI which initially drew 78 responses, followed by an additional eleven by the end of September 2016 as a result of the Company's decision in 2015 to keep the RFI open so that innovative solution providers can submit additional solutions to the Company for consideration. An RFI, by its nature, allows for broader responses than an RFP but requires a greater level of scrutiny and validation of the information provided. The proposals presented via the RFI have provided the Company with valuable insight into potential solutions, including indicative pricing, operational needs and reliability, potential environmental impacts and, in a few cases, potential customer partners. The Company has remained open to other solutions, either via solution providers or customers.

Distributed Energy Resource Evaluation Tool

The Company built a tool, using both internal and external expertise, to evaluate on a comparable basis a diverse range of DER while accounting for duration of availability (*e.g.*, four-

hour battery, eight-plus-hour energy efficiency, two-hour demand response), risk, maturity, flexibility, and ability to otherwise meet the needs in the BQDM Target Area. The Company also developed a portfolio approach to identify a mix of resources that can meet the reliability need over the 12 hours on a design peak day. Using the evaluation tool, the Company evaluated DER solutions using a combination of multiple criteria. Throughout the BQDM Program timeline, the Company is supplementing results from the evaluation with additional qualitative assessments of the solutions' ability to meet the BQDM Program timing and reliability needs while fostering engagement with the community.

Community Engagement and Outreach

The Company has continued to be proactive in engaging with community stakeholders to understand the priorities in the diverse and rapidly changing communities across Brooklyn and Queens. Community engagement is critical to BQDM Program success, and is marketed as the "Neighborhood Program" to customers living in the BQDM Target Area. The Company continues to actively reach out to existing community partners and develop new relationships.

In the second quarter of 2018, Con Edison conducted a range of community meetings and presentations with local stakeholders throughout the BQDM neighborhoods of Brooklyn and Queens to provide program updates on the C&I, CDI, MFEE, and residential adder programs.

The Company presented at the Brooklyn Borough President's Renewable and Sustainable Energy Taskforce ("ReSET") meeting to a broad group of Brooklyn energy stakeholders. Staff additionally coordinated with Brooklyn Community Boards 4 and 15, and with NYC

Councilmember Raphael Espinal to promote residential adder outreach at general community meetings and district-service cabinet meetings.

Company staff engaged in BQDM-focused discussions with business-oriented non-profits in Brooklyn. Company staff met with East New York Industrial Business Improvement District, Evergreen North Brooklyn Business Exchange, Brooklyn Chamber of Commerce Design Expo, Terra CRG Only Brooklyn Real Estate Conference, at Totem Real Estate Tech Meetup, and IMPACCT's Small Business event (formerly Pratt Area Community Council) to summarize the incentives available for business and multifamily customers in the BQDM Target Area.

Company staff coordinated community outreach opportunities with organizations across the Neighborhood Program zone in Brooklyn and Queens. In Queens, the Company participated in an event with the Jamaica YMCA that reached more than a hundred local residents. The weekend-long event provided local residents with marketing material for each of the BQDM related programs. Company personnel also presented at the Locust Grove Civic Association in Queens, and participated in events with St. Nicks Alliance and Cypress Hills Local Development Corp Senior Housing Fair to present MFEE and residential adder programs in Brooklyn.

In furtherance of the Company's utility-side solutions, Con Edison generated a public work notice to advise local residents of the delivery and installation of the battery storage containers in Ozone Park. Staff also communicated with Department of Education officials and local

business owners in anticipation of the batteries' delivery, to minimize the impact on their daily operation. Regular updates were also provided to Community Board 10 when the project was expected to have a community impact.

The Company plans to continue these meetings and activities on a regular basis to keep the community abreast of its plans and actions, and to ensure the effectiveness of its outreach strategies.

Customer Engagement

In the second quarter of 2018, the Company aimed to reach 110,000 customers within the BQDM Area using a combination of online and offline marketing tactics. The Company ramped up email communications and aligned delivery of emails with direct marketing efforts in an effort to better engage customers throughout Q2. In particular, the Company sent emails promoting free LEDs on or around the time when the canvassers were visiting particular neighborhoods. Eight emails were sent throughout the quarter using the subject line: "Want to Upgrade Your Light Bulbs For FREE?" and these were subsequently changed to a seasonal summer message: "Save $$$ This Summer with Free Lighting Upgrades!"

The Company continued its social advertising campaign and has invested in social media to promote the new option for customer referrals. It continues to develop interactive assets that can be used on social media to help with customer engagement. The Company is also using a highly effective in-app form which generates leads at the point of engagement. These tactics will to reduce the number of touchpoints and avoid customer fatigue. The Company intends to

optimize the website going forward to improve the customer journey. The combination of an omni-channel marketing approach and the integration with the contractor's direct marketing efforts will help increase program awareness and reduce skepticism; and enables the field staff to engage with customers.

In addition, throughout the second quarter of 2018, the Company continued its community outreach efforts to raise program awareness in the BQDM Target Area. The implementation contractor continues to raise awareness through marketing efforts such as engaging customers in the field by attending community events. Further, the Company has information indicating that customers have been receptive, and several customers have approached Company representatives to discuss the mailer and their interest in LED lamps offered at no cost by the BQDM Program. The field staff, in addition to installing the LED lamps at residences, distributed flyers informing residents about the benefits of LED retrofits and about various other rebate offerings for energy efficiency measures.

In the second quarter of 2018 Con Edison continued to engage customers through the LED program referral campaign. Since the data shows that many leads come from word-of-mouth marketing, the Company is incentivizing customers to increase leads through a referral campaign.

Measurement & Verification Study

The Brooklyn-Queens Metering & Market Characterization Study, commissioned by Con Edison to gather comprehensive data on consumers' electricity usage patterns through 24-hour load shapes of end-use equipment, is complete.

The Company constantly looks to improve its processes to be well-prepared to perform M&V on additional projects and technology-specific programs even as increasing amounts of DERs, such as distributed generation and energy storage, are implemented under the BQDM Program and procured for future non-wires solutions ("NWS").

The Company continues to work closely with public entity stakeholders, such as NYCHA and DCAS, to accommodate their installation schedules. The Company has scheduled post-inspections for all completed projects and is awaiting completion of installation for the remaining projects. Demand reduction from the Residential Energy Efficiency Program is being verified by the Company as the implementation contractor continues to retrofit inefficient lighting with LEDs for BQDM residential customers. On-site inspections were conducted during October 2017, in which the Company deployed loggers in a sample of sites to capture the lighting load profiles for residential customers. Results from the metering effort were used to verify the program claimed savings.

The Company completed baseline metering efforts of several retail banks in order to quantify the benefits of introducing an emerging technology, phase-change material. The technology

helps maintain comfortable temperatures while reducing peak demand by actively absorbing and releasing heat. Results will provide information on the feasibility of this technology in its ability to provide peak demand reduction not only for the Brooklyn-Queens territory but also the broader grid. The post-installation metering began in Q2 2018 and is scheduled to be completed by the end of summer 2018.

The Company will incorporate lessons learned into its processes, including for M&V, for future targeted demand reduction efforts.

Demand Management Tracking System

The Company is continuing to develop and expand the Demand Management Tracking System ("DMTS") with capabilities to manage customer relationships, project management activities, and to serve as the system of record for the Company's energy efficiency and demand management programs. This system is used to process, monitor, and store customer leads and project information for the purposes of program reporting.

DMTS is intended to become the primary source of information for internal and external reporting, including regulatory reporting, once all the programs have been fully implemented within DMTS. DMTS includes project and measure details associated with CDI and MFEE adder installations for the BQDM Program. DMTS also tracks energy savings calculations and load relief impacts that are used to validate payments to contractors. Contractors for both the MFEE and CDI programs are uploading project data to the DMTS for tracking, validation, and reporting. The DMTS is being expanded to provide additional functionality and tracking for

various other efforts under the BQDM Program such as the Residential Direct Install program, C&I adder installations, as well the efforts associated with DCAS and NYCHA.

BQDM Extension Auction

The Company has been successfully implementing the BQDM Program and projects that it will achieve its Peak Demand Reduction goals as scheduled and under budget.[17] Based on the BQDM Program's success, as well as reductions in peak load forecasts and traditional infrastructure improvements, the Commission approved the Company's request to defer additional traditional investments and deliver additional benefits to customers through an extension of the BQDM Program beyond 2018.[18]

The Company pursued a BQDM Extension Auction to procure additional Peak Demand Reduction to be operational by May 1, 2019. Incentives were set via an auction process. On December 22, 2017, the 2019 BQDM Program Extension Auction Requirements were released on the Con Edison NWS website portal. The pre-screening deadline occurred on March 1, 2018 with a final submission deadline of April 2, 2018. The BQDM Auction resulted in the procurement of 4 MW of additional load relief from battery storage technologies.

[17] While the BQDM Program pre-dates the Targeted Demand Management Program and is not considered an NWS project for purposes of compliance with NWS reporting requirements, the Company is providing a brief summary of the BQDM Extension here because of its relationship to potential NWS projects.
[18] Case 14-E-0302, *Petition for Extension of Time to Implement Brooklyn/Queens Demand Management* Program, Order Extending Brooklyn/Queens Demand Management Program ("Extension Order") (issued July 13, 2017).

3.2 Non-traditional Utility-Side Solutions

The focus of the non-traditional utility-side solutions ("USS") has been to leverage innovative technologies and strategies. Some of the design and implementation activities to implement these non-traditional USS have been developed within the Company; in addition, the Company has solicited services from external vendors on an as-needed basis. Deployment of the non-traditional USS to meet the 11 MW non-traditional utility-side goal has focused on a Distributed Energy Storage System ("DESS") (a battery) and Conservation Voltage Optimization ("CVO"). The Company has started implementation of the DESS and has completed the CVO solution. The two utility-side solutions will result in approximately 18.5 MWs of combined peak load reductions, surpassing the original 11 MW goal. The Company has evaluated other technologies in case they are needed.

Distributed Energy Storage System

The DESS will provide Con Edison with 12 MWh of stored energy and can be configured to deliver this power at 1 MW for 12 hours or 2 MW for 6 hours. Con Edison signed a contract with the vendor on August 18, 2015. Construction began in the second half of January 2018 and its substantial completion day is expected fourth quarter 2018. Closeout of various ancillary contract items such as drainage, fencing, landscaping, security cameras and gates, fire alarm annunciation, water suppression, and remote monitoring will be completed before year end.

Voltage Optimization

The purpose of the CVO project is to optimize the voltage on the 27kV primary system, including the 4kV overhead system, by implementing enhanced, efficient voltage control. Based on M&V calculations, CVO reduced peak load by a total of 7.9 MW for 2016. Additional load flow studies have been performed to identify areas of relative low voltage compared to surrounding areas. For 2017, voltage reduction was increased from 1.5 percent to the 2.5/3.0 percent range. A functionality test was successfully performed in early May 2017 to verify that all settings and procedures are established and working. Initial load reduction based on the test was 16.5 MW, surpassing the utility-side solution goal of an 11 MW load reduction.

4.0 Synergies

In addition to load relief projects being pursued under the BQDM Program, the Company is assessing other load relief solutions being developed in the BQDM Target Area. In particular, Company personnel responsible for the BQDM Program have worked closely with personnel managing the Company's Demand Management Program ("DMP") to identify synergies and benefit from mutual load relief efforts. DMP was instituted to incentivize development of load relief solutions, which would serve as part of the solution to a potential supply constraint resulting from retirement of the Indian Point Energy Center. The solutions that have been implemented in the BQDM Area has provided approximately 800 kW of load relief between 2pm and 6pm time.

In addition to various demand management and energy efficiency programs, the Company will continue to seek opportunities to create synergies with wider Company efforts such as the Company's REV Demonstration projects and other rate case programs.